

What are Your Employees Worth?

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Ideas Emerging at End of 20th Century

- **Knowledge Capital**
- **Knowledge Assets**
- **Knowledge Management**
- **Intellectual Capital**
- **Information Assets**
- **Information Warfare**
- **Information Security**

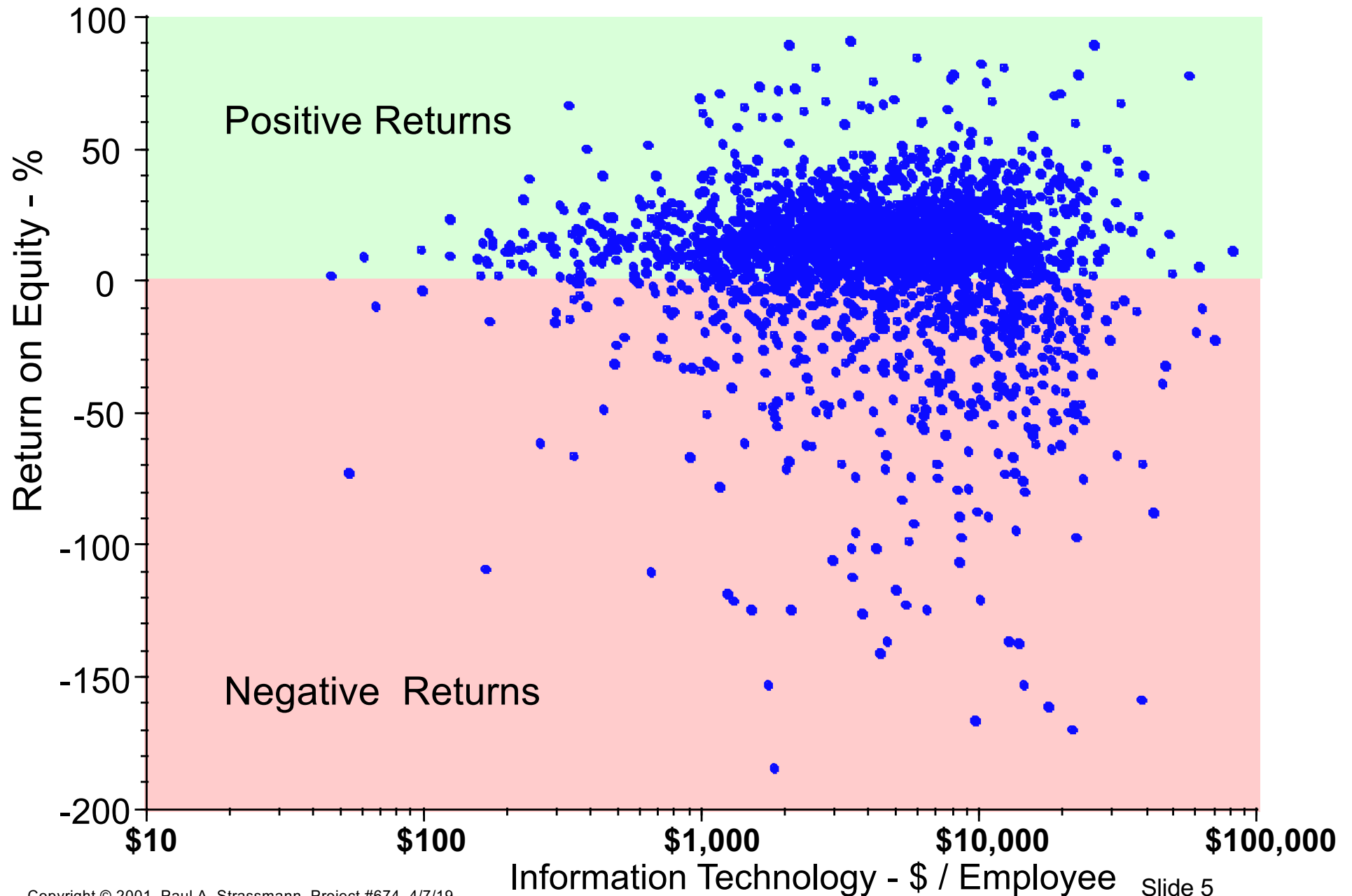
Theme of This Presentation

***“ Only if you Can Measure It
Can You Understand and Invest in It.”***

Presentation Outline – Part I

- Concepts and Theories
- Illustrative Case – Pharmaceutical Firms
- Market Valuation of Employees' Worth
- Structure of Knowledge-Based Economies
- Summaries

Information Technology Spending Is Irrelevant



How Much?

Measuring the Worth of Knowledge

Accepted Metrics Disregard Information as Input

$$\text{Productivity} = \frac{\text{Output}}{\text{Input}}$$

$$\text{Return-On-Assets} = \frac{\text{Profit}}{\text{Finance Capital}}$$

SOURCE OF WEALTH



The Information Economy Must Focus on Information

$$\text{Information Productivity} = \frac{\text{Output}}{\text{Input}}$$

$$\text{Info. Productivity} = \frac{\text{Economic Profit}}{\text{Cost of Information}}$$

SOURCE OF WEALTH



It is Efficient Knowledge Capital that Generates Profits

Economic Profit = Knowledge Capital * Cost of Capital

Knowledge Capital = $\frac{\text{Economic Profit}}{\text{Cost of Capital}}$

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Fundamental Proposition

**Today's *Economic Profit* is
the return realized from an
accumulation of efficient
Knowledge Capital.**

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#1: Collect Latest Financial Data (\$000,1998)

Company	Profits	Finance Capital	Interest Rate - %
MERCK & CO.	\$5,248,200	\$16,506,800	5.35
JOHNSON & JOHNSON	\$3,059,000	\$13,590,000	4.51
GLAXO WELLCOME	\$3,054,400	\$4,586,592	6.47
ABBOTT	\$2,333,231	\$5,713,661	5.16
WARNER-LAMBERT	\$1,254,000	\$3,612,100	8.74

#2: Calculate Economic Value-Added (US\$000)

Company	Economic Value-Added
MERCK & CO.	\$4,365,086
GLAXO WELLCOME	\$2,757,647
JOHNSON & JOHNSON	\$2,446,091
ABBOTT	\$2,038,406
WARNER-LAMBERT	\$938,302

#3: Calculate Knowledge Capital (\$000 1998)

Company	Knowledge Capital
MERCK & CO.	\$81,590,396
JOHNSON & JOHNSON	\$54,237,051
GLAXO WELLCOME	\$42,622,063
ABBOTT	\$39,503,994
WARNER-LAMBERT	\$10,735,726

#4: Show Share of Knowledge Capital, 1998

Company	Finance Capital	Knowledge Capital
GLAXO WELLCOME	9.7%	90.3%
ABBOTT LABORATORIES	12.6%	87.4%
MERCK & CO.	16.8%	83.2%
JOHNSON & JOHNSON	20.0%	80.0%
WARNER-LAMBERT	25.2%	74.8%

#5: Calculate Knowledge Capital/Employee

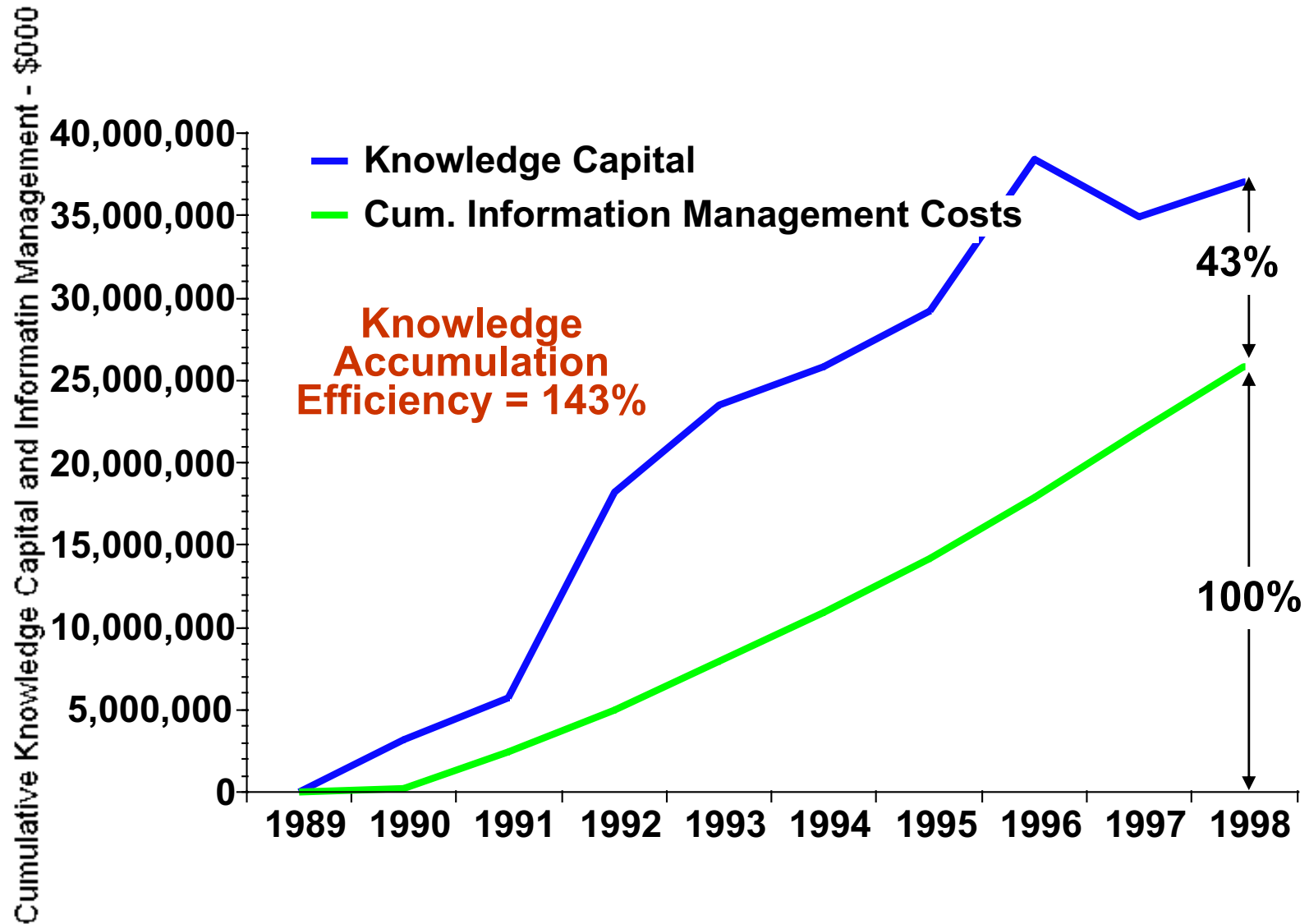
Company	Employees	Knowledge Capital/Employee
MERCK & CO.	57,300	\$1,423,916
GLAXO WELLCOME	54,350	\$784,215
ABBOTT	56,236	\$702,468
JOHNSON & JOHNSON	93,100	\$582,568
WARNER-LAMBERT	41,000	\$261,847

#6: Assess Employees as a Valuable Asset

Company	Annual Valuation of Employees As a Risky Asset	Estimated Difference between Employee Valuation and Employee Pay
MERCK & CO.	\$185,109	\$130,109
GLAXO WELLCOME	\$101,948	\$46,948
ABBOTT	\$91,321	\$36,321
JOHNSON & JOHNSON	\$75,734	\$20,734
WARNER-LAMBERT	\$34,040	\$ -20,960

Acquired by
Pfizer, June 2000

#7: Measure Knowledge Accum. Efficiency (Abbott)



Summary Observation

- **Knowledge Capital is the largest asset for most corporations;**
- **Knowledge Capital can be measured.**

Presentation Outline – Part III

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Stock Prices Cannot Explain Knowledge Capital



SOURCE: www.yardeni.com

Comparing Total and Market Capitalization

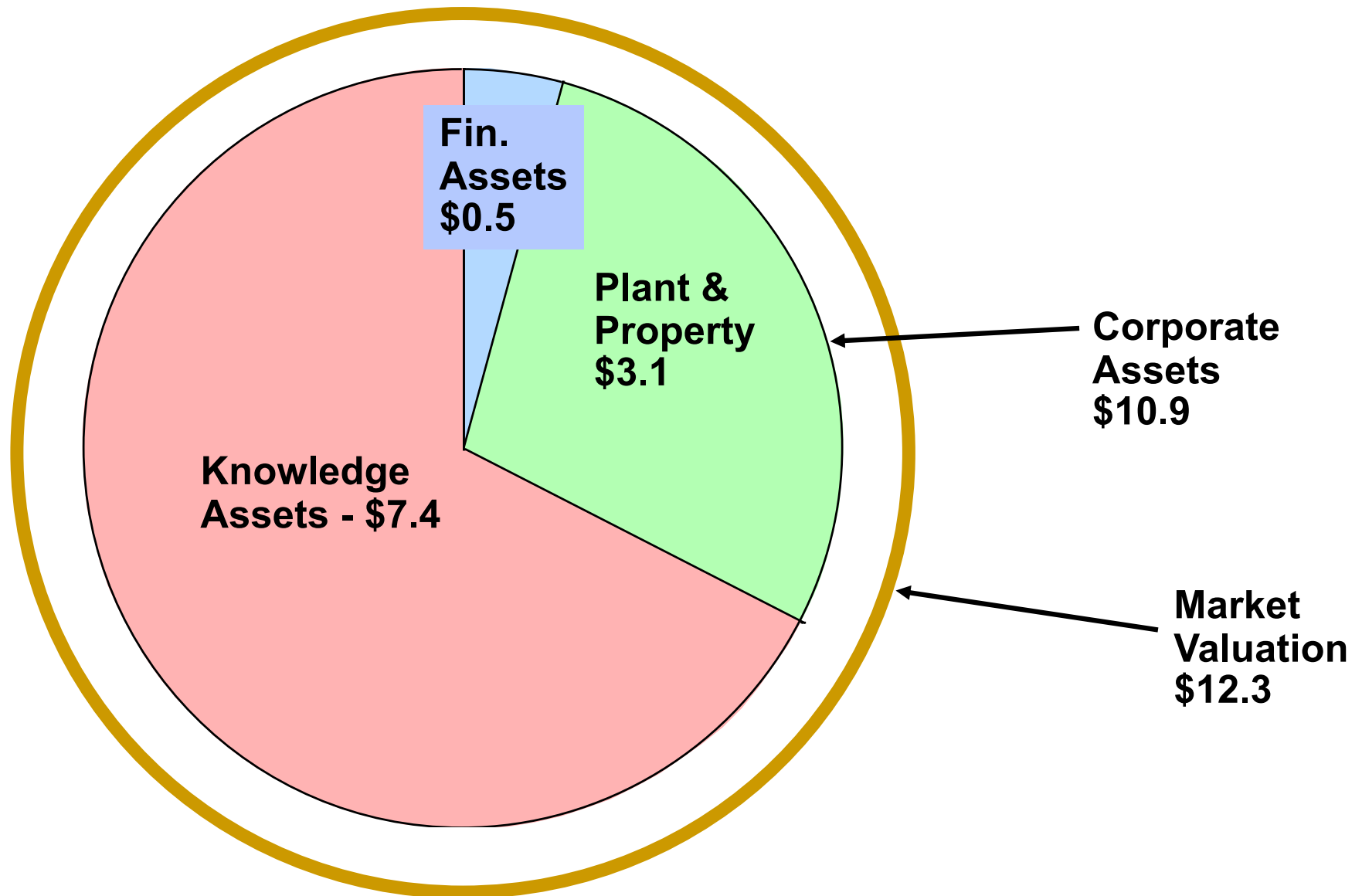
Company	Finance + Knowledge Capital	Market Valuation	Fin + Knowledge /Market Capital
ABBOTT	\$45,217,655	\$74,287,000	61%
JOHNSON & JOHNSON	\$67,827,051	\$112,732,000	60%
MERCK & CO.	\$98,097,196	\$174,083,000	56%
GLAXO WELLCOME	\$47,208,655	\$124,315,000	38%
WARNER-LAMBERT	\$14,347,826	\$61,771,000	23%

All Valuations as of December 31, 1998

**Acquired by
Pfizer, June 2000**



Knowledge Capital in the US Economy (1998 data, \$ trillions)

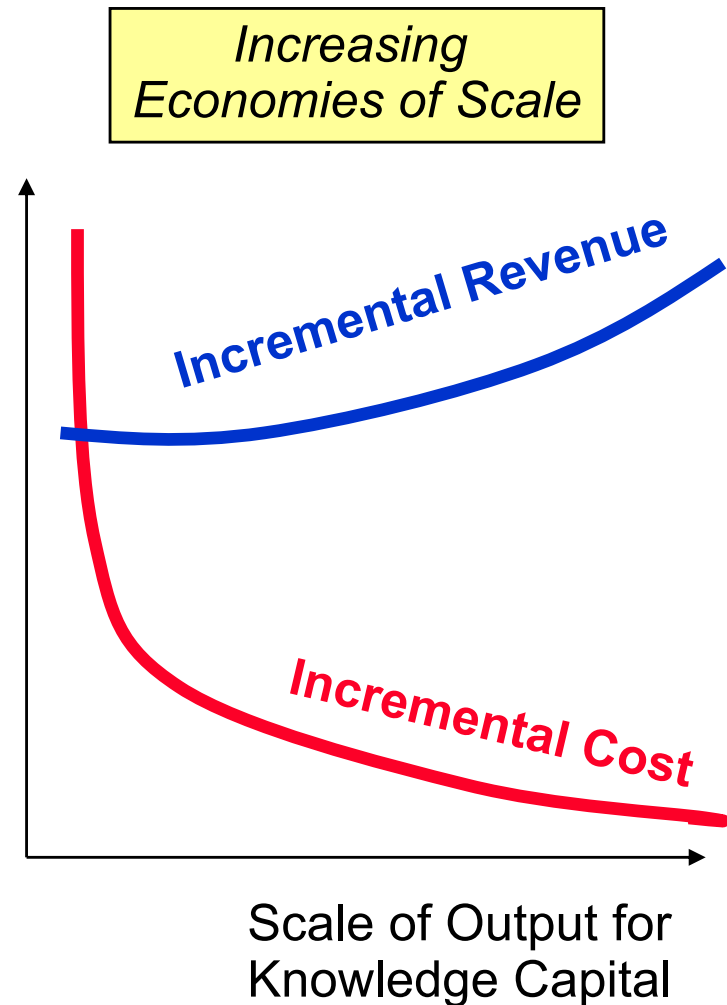
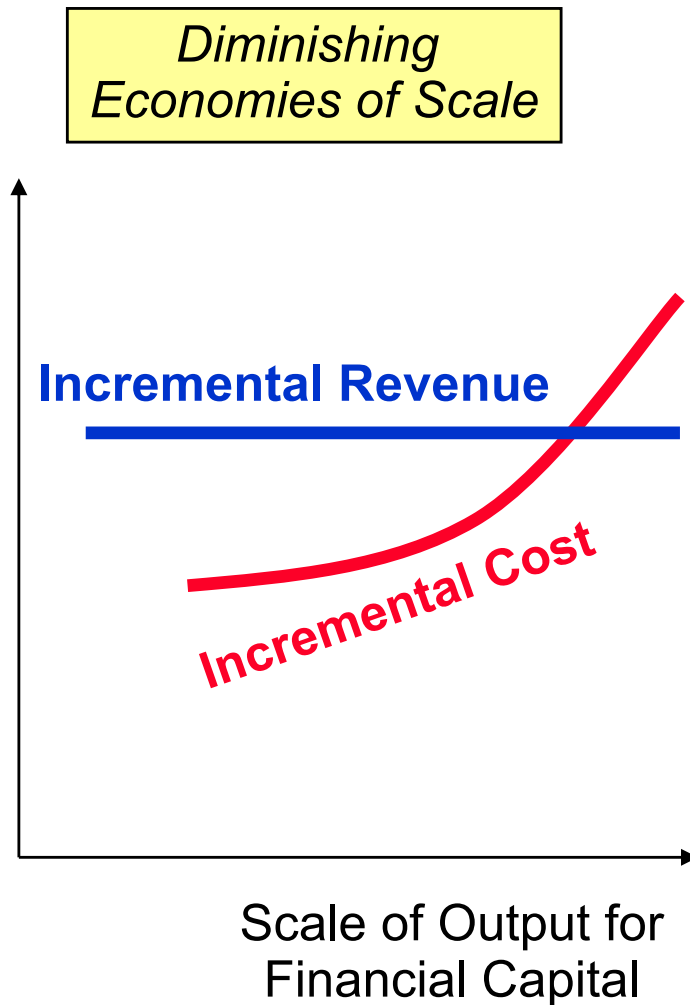


SOURCE: Strassmann, Inc. database of 5,763 US firms

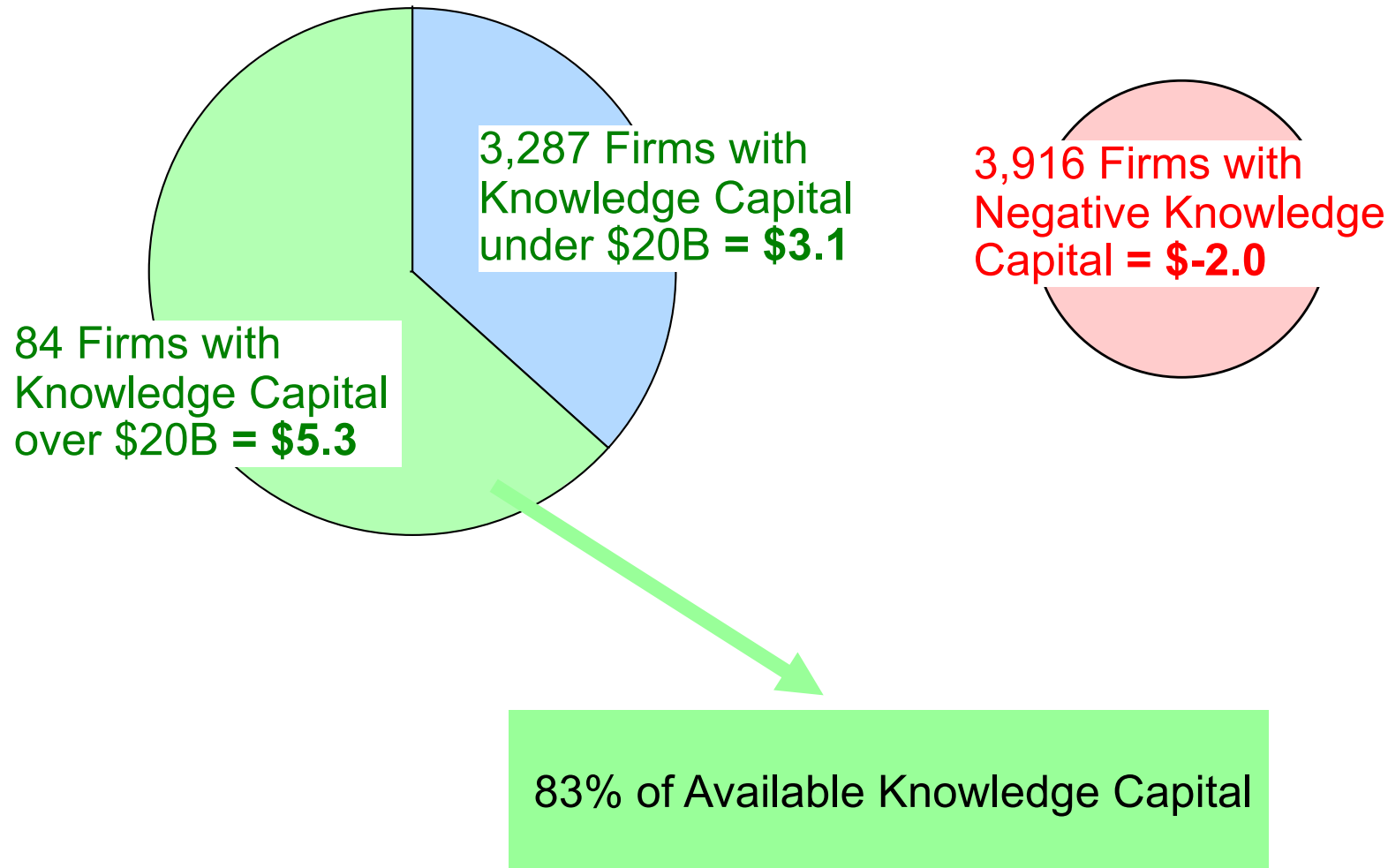
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Comparison of Financial Capital vs. Knowledge Capital



Knowledge Capital is Concentrated *(in \$ Trillions)*



SOURCE: Strassmann, Inc. Data Base of U.S. Knowledge Capital

Few Firms Remaining as Software Firms Consolidate

	Number of Firms	Total Profits	% of total firms	% of total Profits
Losses - \$ Millions	380	\$-4,673	53.4%	-38.8%
Profits - \$ Millions	331	\$8,932	46.5%	74.2%
Microsoft Profits - \$ Millions	1	\$7,785	0.1%	64.6%
Total Net Profits	712	\$12,044	100.0%	100.0%

SOURCE: 1998 Financial Reports for listed Global Firms with SIC Codes 7371 and 7372

Negative Knowledge Capital Firms May Not Survive

Grouping of Firms	Number of Firms	Total Knowledge Capital - \$Billion	% of total firms	% of total Knowledge Capital
Negative Knowledge Capital	3,916	\$-1,997	53.7%	-31.1%
Positive Knowledge Capital < \$20 B	3,287	\$3,078	45.1%	48.0%
Positive Knowledge Capital > \$20 B	84	\$5,331	1.2%	83.1%
Total Knowledge Capital	7,287	\$6,411	100.0%	100.0%

SOURCE: Knowledge Capital®, 1998 Financial Reports for listed U.S. Firms

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Summary Observation

- **Social and political conflicts will occur as Knowledge Capital is displaced and redistributed on a a global scale.**

Summary Observation

- **The marginal cost characteristics of Knowledge Capital favor concentration of economic power in dominant firms.**
- **The “cyber-utopian” theories about increased competitiveness of small firms applies only in the case of radical innovations.**

Summary Observation

- **Successful firms will have to plan and budget Knowledge Capital with equal care as given to Financial Capital.**

Summary Observation

- **Successful firms will have to plan and budget for rapid accumulation of Knowledge Capital / Employee as the principal source of wealth.**

Fourth Rule

**For Profit Gains I.T. Spending Must
Support Competitive Strategies**

Where to Focus I.T. Investments

Contributors to Profitability	Explanation of Profitability
Market position; Competition	65%
Strategic moves	10%
Operating effectiveness	15%
Random events, luck	10%

Source: The PIMS Program, sample of over 3,000 businesses from over 300 corporations

Use I.T. to Improve Strategic Influences

Favorable	Strategic Influence	Unfavorable
Differentiated	Product or Service	Commodity
Segmented	Served Market	Unsegmented
High	Relative Market Share	Low
High	Relative Product Quality	Low
Low	Relative Costs	High
Good	Operating Effectiveness	Poor
Low	Investment Intensity	High
Substantial	Perceived Quality	Thin
Growing	Value Added	Shrinking
Positive	Growth Rate	Flat or Negative
High	SG&A and R&D	Low
New	Age of Assets	Old

All I.T. Investments Must Start with Strategic Assessment

Business	Return-on-Equity	Market Share	Market Growth	Allocation of Investments
A	6%	10%	0%	44%
B	41%	22%	-2%	5%
C	7%	8%	23%	21%
D	34%	67%	3%	26%
E	30%	22%	50%	4%

I.T. Portfolio: Sorting Out Priorities

Business	A	B	C	D	E
Market Share	No Impact	Positive Impact	Negative Impact	Decisive Positive Impact	Positive Impact
Investment Intensity	Decisive Negative Impact	Decisive Positive Impact	Positive Impact	No Impact	No Impact
Relative Quality	Negative Impact	No Impact	No Impact	Decisive Positive Impact	No Impact
Production Effectiveness	Positive Impact	Decisive Positive Impact	Negative Impact	Positive Impact	No Impact
Employee Productivity	Positive Impact	Positive Impact	No Impact	Decisive Positive Impact	Positive Impact
Product "Value"	No Impact	No Impact	No Impact	Decisive Positive Impact	No Impact
Relative Direct Costs	Positive Impact	Positive Impact	Positive Impact	Positive Impact	No Impact
Capacity Utilization	Decisive Positive Impact	Positive Impact	Decisive Positive Impact	Decisive Negative Impact	Positive Impact

 No Impact
 Positive Impact
 Decisive Positive Impact
 Negative Impact
 Decisive Negative Impact

The Difference Between I.T. Management and I.T. Leadership

Operational Effectiveness =
Management

Strategic Choices =
Leadership

Management is Not Leadership

Management

- Do what is necessary.
- Execute better than the competitors.
- Deliver quality, efficiency, productivity, etc.
- Delegate if you can.

Leadership is Not Management

Leadership

- Attain sustainable competitive advantage.
- Deliver better value to customers.
- Pick market segment where you can win.
- Make it your primary job.